

Abstract Submitted
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Ramp-up of CHI initiated plasmas on NSTX¹ D. MUELLER, PPPL, Princeton University, R. RAMAN, Univ. of Washington, M.G. BELL, PPPL, Princeton University, T.R. JARBOE, Univ. of Washington, A.L. ROQUEMORE, PPPL, Princeton University, B.A. NELSON, Univ. of Washington — The small bore of the spherical torus (ST) concept presents a serious challenge for plasma-current initiation and ramp-up for next generation of STs. A method of non-inductive startup, referred to as transient coaxial helicity injection (Transient CHI), was successfully developed on the Helicity Injected Torus (HIT-II) experiment and employed on the National Spherical Torus Experiment (NSTX) to produce up to 160 kA of toroidal plasma current on closed flux surfaces without use of the central solenoid. The CHI formed plasmas have been successfully coupled to inductively driven current ramp-up and neutral beam heating. These plasmas with plasma current over 700 kA enter the H-Mode and have performance comparable to plasmas initiated by inductance alone and demonstrates the feasibility of coupling CHI initiated plasmas to other means of current ramp-up and sustainment.

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